DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is longer than 150 words. Correction is required. See MPEP § 608.01(b).

It is noted that claim 8 and those claims depending from claim 8 (i.e. 9-12), as well as claim 13, do not invoke 35 USC 112, sixth paragraph because they contain sufficient structure for the elements claimed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wakabayashi et al. (US 4,669,073).

Re. claim 1: Wakabayashi et al. disclose an optical disc apparatus for recording and/or reproducing information on/from an information surface of a rotatable optical disc, comprising:

a supporting assembly (32); (see fig. 1; col. 3 lines 32-58)

a motor (30), associated with the supporting assembly, for rotating the optical disc (31) about a spindle axis and having a magnetic rotor and a magnetic motor stator

magnetically cooperating with each other across an intermediate air gap (inherent); (see fig. 1; col. 3 lines 32-58)

optical means associated with the supporting assembly for scanning an information surface of said optical disc and comprising a focusing lens assembly (38) having a movable focusing lens having a focusing axis (vertical axis near the lens assembly), said focusing lens assembly being movable in an axial direction along said focusing axis for focusing an optical beam on said information surface of said optical disc; (see col. 1 lines 15-45)

a swing arm assembly comprising a generally elongated swing arm structure (36a) mounting said focusing lens assembly near a free end, the swing arm assembly being pivotally rotationally movable about a swing axis (M) remote from said free end and directed generally perpendicularly to the swing arm structure and generally parallel to said spindle axis and said focusing axis, such that the swing arm assembly rotationally sweeps a scanning plane generally parallel (since the axis of the disk and the swing axis (M) are generally parallel to each other, it follows that the scanning plane of the swing arm assembly is generally parallel to the plane of the disk) to said information surface of the mounted optical disc, the swing arm assembly thereby causing said focusing lens assembly to scan over the information surface of a mounted optical disc; (see figs. 1, 2, 4; col. 3 lines 32-58)

rotational pivoting means for enabling said rotational scanning movements of the swing arm assembly and comprising stationary pivoting means (33) associated with the supporting assembly and movable pivoting means (34) associated with the swing arm

structure pivotally cooperating with the stationary pivoting means; (see fig. 1; col. 3 lines 32-58)

movable magnetic scanning means (39) provided at the free end of the swing arm assembly for driving said swing arm assembly rotationally about said swing axis; (see fig. 1; col. 3 lines 32-58)

stationary magnetic scanning means (40a, 40b) associated with the supporting assembly and comprising a magnetic scanning stator core (40a) provided near and spaced from the free end of the swing arm assembly for magnetically cooperating with said movable magnetic scanning means across at least one intermediate air gap disposed in a curved plane; (see fig. 1; col. 3 lines 32-58)

wherein the stationary magnetic scanning means are rigidly associated with the magnetic motor stator. (the stationary magnetic scanning means and the magnetic motor stator are both connected to the chassis of the disk drive (32) which makes them rigidly associated relative to one another)

Re. claim 2: Wakabayashi et al. disclose that the motor stator and the scanning stator core are integrated into a combined stationary unit. (by being connected to the chassis of the disk drive (32) they are all integral of each other and therefore constitute a combined stationary unit)

Re. claim 3: Wakabayashi et al. disclose that the stationary pivoting means are rigidly associated with the magnetic motor stator. (the stationary pivoting means and the

magnetic motor stator are both connected to the chassis of the disk drive (32) which makes them rigidly associated relative to one another)

Re. claim 4: Wakabayashi et al. disclose that the motor stator, the scanning stator core and the stationary pivoting means are integrated into a combined stationary unit. (by being connected to the chassis of the disk drive (32) they are all integral of each other and therefore constitute a combined stationary unit)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi et al. in view of Korth (US 4,794,586).

Re. claim 1: Wakabayashi et al. disclose:

an optical disc apparatus for recording and/or reproducing information on/from an information surface of a rotatable optical disc, comprising:

a supporting assembly (32); (see fig. 1; col. 3 lines 32-58)

a motor (30), associated with the supporting assembly, for rotating the optical disc (31) about a spindle axis and having a magnetic rotor and a magnetic

motor stator magnetically cooperating with each other across an intermediate air gap (inherent); (see fig. 1; col. 3 lines 32-58)

an optical means associated with the supporting assembly for scanning an information surface of said optical disc and comprising a focusing lens (38) assembly having a movable focusing lens having a focusing axis (vertical axis), said focusing lens assembly being movable in an axial direction along said focusing axis for focusing an optical beam on said information surface of said optical disc; (the coil 39 and the magnets 40 together allow for focusing)

a swing arm assembly comprising a generally elongated swing arm structure (36a) mounting said focusing lens assembly near a free end, the swing arm assembly being pivotally rotationally movable about a swing axis (M) remote from said free end and directed generally perpendicularly to the swing arm structure and generally parallel to said spindle axis and said focusing axis, such that the swing arm assembly rotationally sweeps a scanning plane generally parallel (since the axis of the disk and the swing axis (M) are generally parallel to each other, it follows that the scanning plane of the swing arm assembly is generally parallel to the plane of the disk) to said information surface of the mounted optical disc, the swing arm assembly thereby causing said focusing lens assembly to scan over the information surface of a mounted optical disc; (see figs. 1, 2, 4; col. 3 lines 32-58)

Wakabayashi et al. fail to disclose or fairly suggest:

rotational pivoting means for enabling said rotational scanning movements of the swing arm assembly and comprising stationary pivoting means (10) associated with the supporting assembly and movable pivoting means associated with the swing arm structure pivotally cooperating with the stationary pivoting means;

movable magnetic scanning means (6a and 6b) provided at the free end of the swing arm assembly for driving said swing arm assembly rotationally about said swing axis;

stationary magnetic scanning means (3) associated with the supporting assembly and comprising a magnetic scanning stator core provided near and spaced from the free end of the swing arm assembly for magnetically cooperating with said movable magnetic scanning means across at least one intermediate air gap disposed in a curved plane; and

wherein the stationary magnetic scanning means are rigidly associated with the magnetic motor stator.

Korth teaches:

rotational pivoting means for enabling said rotational scanning movements of the swing arm assembly and comprising stationary pivoting means (10) associated with the supporting assembly and movable pivoting means associated with the swing arm structure pivotally cooperating with the stationary pivoting means; (see figs. 1a, 1b; col. 3 line 64 – col. 4 line 11)

movable magnetic scanning means (6a) provided at the free end of the swing arm assembly for driving said swing arm assembly rotationally about said swing axis; (see figs. 1a, 3; col. 3 line 64 – col. 4 line 11)

stationary magnetic scanning means (3) associated with the supporting assembly and comprising a magnetic scanning stator core provided near and spaced from the free end of the swing arm assembly for magnetically cooperating with said movable magnetic scanning means across at least one intermediate air gap (inherent) disposed in a curved plane; (see figs. 1a, 1b; col. 3 line 64 – col. 4 line 11)

wherein the stationary magnetic scanning means are rigidly associated with the magnetic motor stator. (the stationary magnetic scanning means and the magnetic motor stator are both connected to the chassis of the disk drive which makes them rigidly associated relative to one another) (see col. 3 line 64 – col. 4 line 11)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the actuator arm assembly of Wakabayashi et al. with the actuator arm assembly of Korth. One of ordinary skill in the art would have been motivated to do this in order to allow for a very light weight construction and increased reliability.

Re. claim 2: Wakabayashi et al. disclose that the motor stator and the scanning stator core are integrated into a combined stationary unit. (by being connected to the chassis

of the disk drive (32) they are all integral of each other and therefore constitute a combined stationary unit).

Re. claim 3: Wakabayashi et al. disclose that the stationary pivoting means are rigidly associated with the magnetic motor stator. (the stationary pivoting means and the magnetic motor stator are both connected to the chassis of the disk drive (32) which makes them rigidly associated relative to one another).

Re. claim 4: Wakabayashi et al. disclose that the motor stator, the scanning stator core and the stationary pivoting means are integrated into a combined stationary unit. (by being connected to the chassis of the disk drive (32) they are all integral of each other and therefore constitute a combined stationary unit).

Re. claim 5: Korth discloses:

> focusing guide means (13) for enabling the axial focusing movements of the focusing lens assembly along said focusing axis; (see figs. 1a, 1b; col. 3 line 64 – col. 4 line 11)
>
> movable magnetic focusing means (6b) provided at the free end of the swing arm assembly for axially driving said focusing lens assembly along said focusing axis for focusing an optical beam on the disc information surface; (see figs. 1a, 1b; col. 3 line 64 – col. 4 line 11)

stationary magnetic focusing means (4) associated with the supporting assembly and comprising a magnetic focusing stator core provided near and spaced away from the free end of the swing arm assembly for magnetically cooperating with the said movable magnetic focusing means across at least one intermediate air gap disposed in a curved plane; (see figs. 1a, 1b; col. 3 line 64 – col. 4 line 11)

wherein the stationary magnetic focusing means are rigidly associated with the magnetic motor stator. (the stationary magnetic focusing means and the magnetic motor stator are both connected to the chassis of the disk drive which makes them rigidly associated relative to one another) (see col. 3 line 64 – col. 4 line 11)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the actuator arm assembly of Wakabayashi et al. with the actuator arm assembly of Korth. One of ordinary skill in the art would have been motivated to do this in order to allow for a very light weight construction and increased reliability.

Re. claim 6: Wakabayashi et al. disclose that the motor stator, the scanning stator core, the stationary pivoting means and the focusing stator core are integrated into a combined stationary unit. (by being connected to the chassis of the disk drive (32) they are all integral of each other and therefore constitute a combined stationary unit)

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi et al. in view of Korth, further modified by Nakahara et al. (US 6,362,553 B1).

Re. claim 7: Wakabayashi et al. in view of Korth fail to disclose or fairly suggest:

the combined stationary unit comprises a stator packet assembled from magnetizable individual stator laminations.

However, Nakahara et al. disclose a rotary motor comprising magnetizable individual stator laminations (2). (see figs. 77-82; abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use magnetizable individual stator laminations as taught by Nakahara et al. in the spindle motor of Wakabayashi et al. in view of Korth. One of ordinary skill in the art would have been motivated to do this in order to ensure high productivity and reliability at low cost. (see abstract)

Allowable Subject Matter

7. Claims 8-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Re. claim 8: the stationary magnetic scanning means comprise a number of individual stator coils arranged on the stator core in a serial arrangement along the rotational scanning path of the movable permanent magnetic scanning means,

electronic commutating means being provided to selectively switch stator coils on and off,

scanning sensor means being provided for detecting, and scanning control means being provided for controlling the rotational position of the arm structure respectively, by controlling the current amplitude and direction in each of the stator coils which has been selectively switched on in order to control the rotational arm position and movements, along with the remaining limitations in the claim cannot be found in the prior art.

Re. claims 9-12: claims 9-12 depend from claim 8 and the subject matter contained in these claims is allowable for at least the same reasons as claim 8

Re. claim 13: the movable focusing means comprising two cylindrical focusing coils which have a generally rectangular shape in cross-section and have a central opening, two pairs of parallel outer side surfaces, two pairs of inner side surfaces and outwardly facing axial end surfaces at the axially spaced ends of the coil,

the scanning coil being bonded with one of its outer side surfaces to the free end of the swing arm structure in a position with its central axis generally parallel to the scanning movements of the swing arm,

each focusing coil being bonded at a part of one of its outwardly facing axial end surfaces on one side of its central opening against the outer side surface of the scanning coil which is remote from the swing arm structure, the two focusing coils being disposed such that said parts of their outwardly facing axial end surfaces are near to each other, parallel to each other and generally parallel to the scanning movements of the swing arm,

the combined stationary magnetic means comprising an elongated permanent-magnet means facing the movable focusing coils and spaced from the focusing coils by said air gap, and further comprising a magnetically permeable stator supporting the permanent-magnet means and having a stator part passing through the central opening of the scanning coil with play, the permanent magnet means being magnetically polarized in a radial direction relative to the swing axis of the swing arm assembly and the arrangement being such that a substantially radially directed permanent magnetic field is set up across said air gap; along with the remaining limitations in the claim cannot be found in the prior art.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosmalen (US 2005/0105409 A1) discloses a magnetic focusing device on the free end of an actuator arm of an optical disk drive. Ogawa et al. (US 6,052,357) discloses an optical disk actuator arm movable by a voice coil motor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM B. DRAVININKAS whose telephone number is (571)270-1353. The examiner can normally be reached on Monday - Thursday and Alt. Fridays 9:00a - 6:00p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/A. B. D./
Examiner, Art Unit 2627

/Andrea L Wellington/
Supervisory Patent Examiner, Art Unit 2627